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AREA AND OWNERSHIP OF FOREST LAND IN SANTA CRUZ COUNTY, CALIFORNIA

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FOREWORD

To provide answers to the many questions about the nation's timber resource, Congress--through the McSweeney-McNary Act of 1928--authorized a nation-wide Forest Survey. The five major objectives of this Survey are:

(1) To inventory all forest lands and the standing timber on those lands.

(2) To determine the current and prospective rate of timber growth, and the productive capacity of the forest lands.

(3) To determine the rate of timber depletion through cutting, fire, insects, disease, and other causes.

(4) To determine the present and probable future requirements for lumber and other forest products by all consumers.

(5) To provide, through correlation of these facts with one another and with other economic knowledge, a sound basis for formulating forest policies and management plans at local, State, and national levels.

In California this work is the responsibility of the Division of Forest Economics of the California Forest and Range Experiment Station at Berkeley.

This report presents the statistics of forest areas and forest land ownership for Santa Cruz County, California as of 1948. Besides the facts about the extent, location, and condition of all forest lands and the timber stands on those lands, this release gives quantitative data as to the type of ownership, size of ownership, and number and kinds of owners. Estimates of timber volumes are not included because volume sampling was not designed to provide this information on areas as small as counties.

This release is the fifth of a series of county statistical reports presenting data on area and ownership of forest land in the Redwood--Douglas-fir subregion of California. A major statistical report presenting data on areas, timber volumes, ownership, growth, and drain has been published for this subregion.

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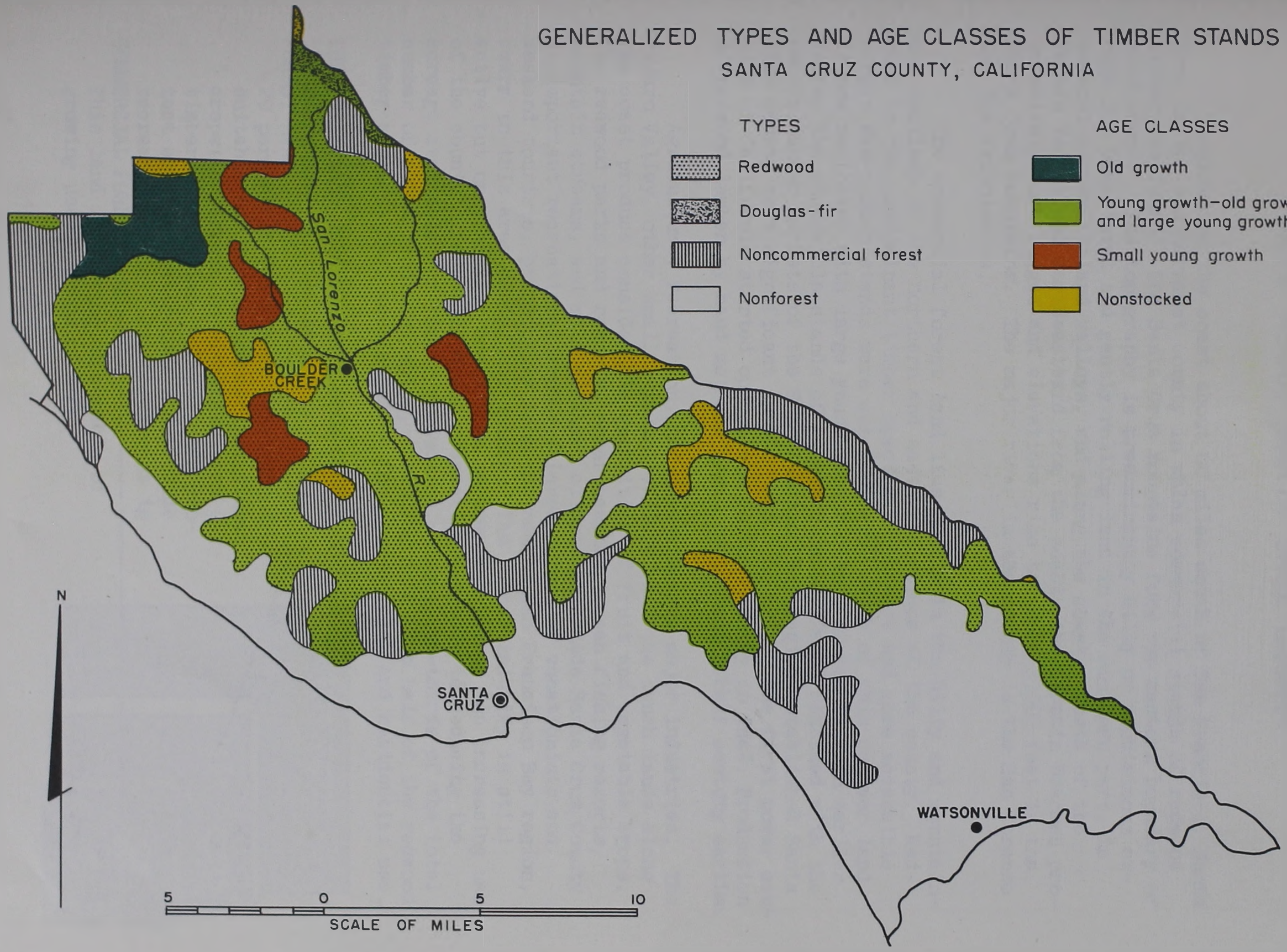
GENERALIZED TYPES AND AGE CLASSES OF TIMBER STANDS

SANTA CRUZ COUNTY, CALIFORNIA



FACTS ABOUT SANTA CRUZ COUNTY

Located on the coast about 60 miles south of San Francisco, Santa Cruz is the southernmost county in which commercial stands of redwood timber are found. The Santa Cruz Mountains form the eastern boundary of this county. The topography is predominantly hilly or mountainous except for some level and gently rolling land in the southern part, in several central inland valleys, and along the coast. North of the Pajaro Valley and northeastward from the coast, the terrain becomes progressively more rugged and elevations rise to about 3,000 feet in the Santa Cruz mountains. The major river in the county is the San Lorenzo and its tributaries.

The commercial forest land lies mostly in the hilly and mountainous sections of the northern and eastern portions of the county. Redwood is the predominant timber species. The best and more accessible virgin saw-timber stands were cut long ago. Much of this cutover land is now restocked with large young growth stands of timber. In earlier years, the accessible stands of virgin redwood timber combined with the nearby lumber markets of the San Francisco Bay region established Santa Cruz County as a significant lumber producing area. The first power sawmill of California started operations in this county in 1842. Production of redwood lumber by hand methods began here about a half century earlier.

Agriculture, recreation, and lumbering are major industries. The Pajaro Valley, other smaller inland valleys, and the bench lands along the coast produce considerable quantities of fruit and vegetable crops. The redwood parks and resorts, ocean beaches, ocean fishing resorts, mountain streams, and mild pleasant climate have made Santa Cruz County an important recreational center. Large crowds of vacationists and weekend tourists, principally from the nearby San Francisco Bay region, swarm to this area during the summer. The lumber industry is still active but on a smaller scale than in previous years. An increasing use of the county's forest land for recreation purposes is reducing the acreage available for timber production. About two-thirds of the total number of rural land ownerships, including more than half of the redwood timber acreage, have been acquired for recreational and residential use.

THE TOTAL LAND AREA OF SANTA CRUZ COUNTY IS
281,000 acres

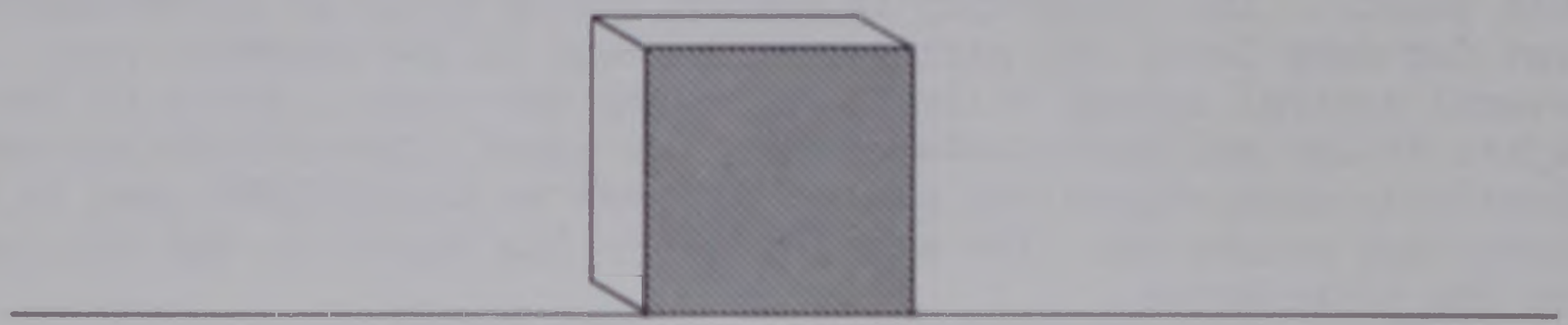
68 percent of this is
FOREST LAND
190,000 acres

29 percent of the forest land is not suitable for growing commercial timber crops; 5 percent is withdrawn from timber utilization. These lands protect critical watersheds and provide recreation areas. But 66 percent is
COMMERCIAL FOREST LAND
125,000 acres

This land is growing or capable of growing usable crops of wood.

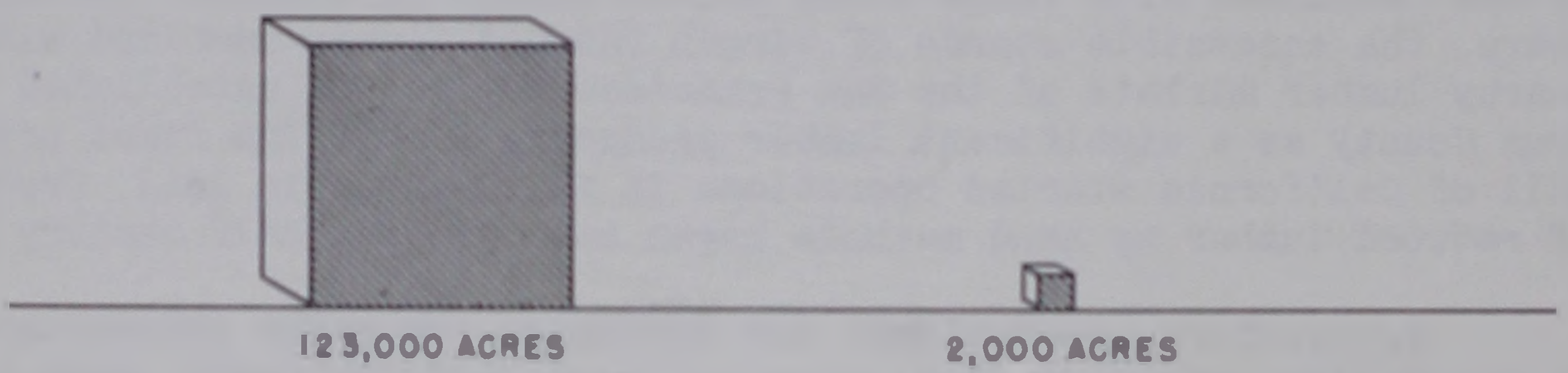
COMMERCIAL FOREST LAND

OWNERSHIP



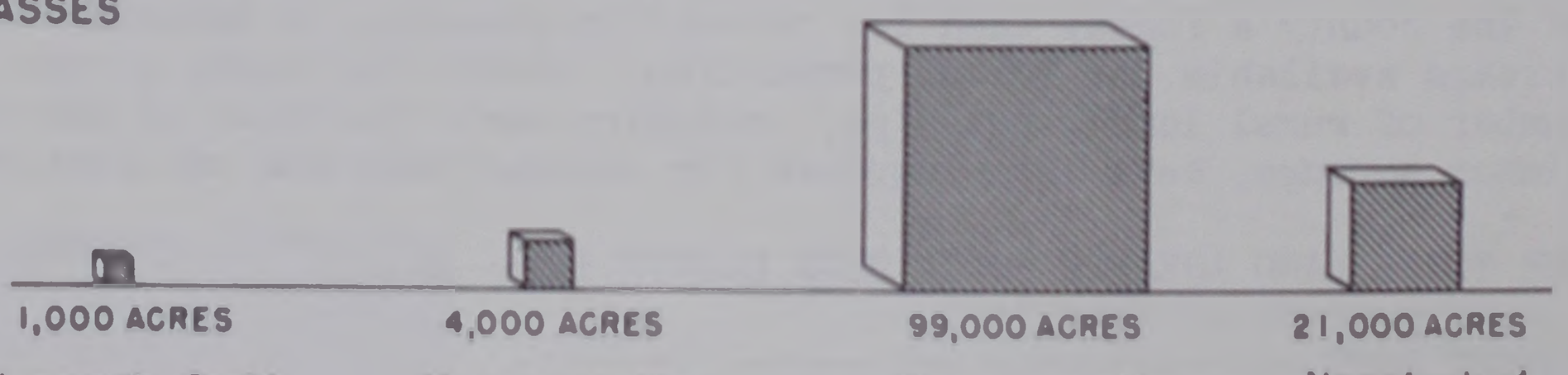
All of the commercial forest is privately owned. (table 1)

TYPES



The redwood type occupies 98 percent of the commercial forest land. Stands classified as Douglas-fir occur on the remaining 2 percent. (table 5)

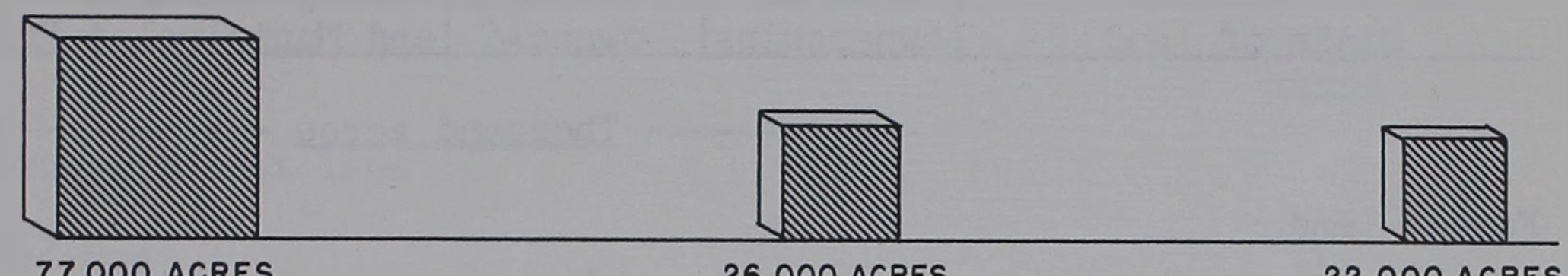
AGE CLASSES



Young growth stands occupy 79 percent of the commercial forest land area. Three percent of the land supports mixed stands of mature and immature timber in which immature timber is dominant. Areas of old-growth stands compose only 1 percent. The remaining 17 percent is nonstocked with commercial conifers. (table 7)

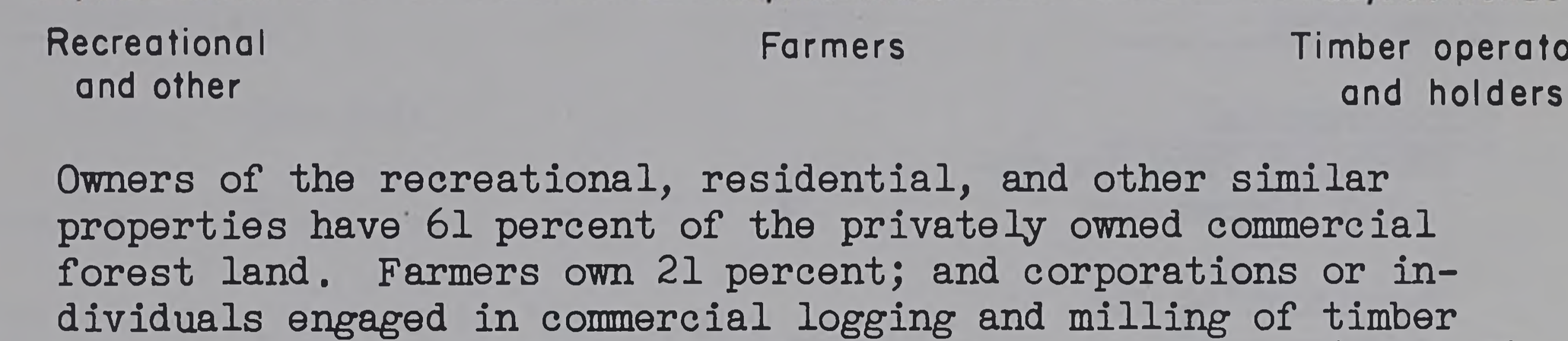
PRIVATELY OWNED COMMERCIAL FOREST LAND

TYPE OF OWNERSHIP



Owners of the recreational, residential, and other similar properties have 61 percent of the privately owned commercial forest land. Farmers own 21 percent; and corporations or individuals engaged in commercial logging and milling of timber or planning future operations, 18 percent. (table 3)

SIZE OF OWNERSHIP



Eighty-four percent of the privately owned commercial forest land is in small ownership units of less than 5,000 acres. Holdings of 5,000 to 19,000 acres comprise the remaining 16 percent. There are no ownership holdings of 20,000 acres and larger. (table 6)

Table 1.- Total land area by major classes of land and by ownership class, 1948

Class of land	Total all ownerships	Federally owned 1/	State, County, and Municipal	Private
	---------- Thousand acres ----------			
Forest land				
Commercial	125	-	(2/)	125
Noncommercial				
Reserved from commercial timber use	9	-	9	-
Unproductive for timber use 3/	56	-	2	54
Total forest land	190	-	11	179
Nonforest land	4/ 91	1	1	89
All land	5/ 281	1	12	268

1/ Because the figures in this tabulation are derived by sampling procedure, they may vary somewhat from the actual published figures. For details on sampling procedures and sampling errors for various area sizes see appendix.

2/ Formerly private land deeded to the State for nonpayment of taxes. Less than 500 acres in total.

3/ Includes 2,000 acres reserved for special use.

4/ Includes 1,000 acres of water according to survey standards of area classification but defined by the Bureau of Census as land.

5/ From "Areas of the United States 1940," U. S. Bureau of the Census.

Table 2.- Total land area by vegetation and nonvegetation types, 1948

Type	Area Thousand acres
Commercial forest land	
Redwood	123
Douglas-fir	2
Total commercial	125
Noncommercial forest land	
Reserved from commercial timber use	
Redwood	9
Unproductive for timber use[1/]	
Coniferous woodland	10
Hardwoods (woodland)	25
Woodland-grass	(2/)
Chaparral	21
Total noncommercial	65
Total forest land	190
Nonforest	
Coastal sagebrush	3
Grass	30
Barren	1
Marsh	(2/)
Cultivated, urban and industrial	56
Water[3/]	1
Total nonforest land	91
All land	281

1/ Includes 2,000 acres reserved for special use.
2/ Less than 500 acres.
3/ Water according to survey standards of area classification but defined by the Bureau of Census as land.

Table 3.- Number of ownerships and area of privately owned land by type of ownership, 1948

Type of ownership	Ownerships		Total land area		Commercial forest land	Non-commercial forest land	Non-forest land
	No.	Pct.	Thousand acres	Pct.	--- Thousand acres ---		
Timber operating company	-	-	-	-	-	-	-
Timber holding company	3	0.1	8	3.0	7	1	(1/)
Timber operating individual	17	0.5	3	1.1	2	(1/)	1
Timber holding individual	44	1.4	20	7.5	13	6	1
Range livestock farming company	1	-	2	0.7	(1/)	(1/)	2
Range livestock farming individual	9	0.3	10	3.7	2	2	6
Other farmers	1,283	39.4	90	33.6	24	16	50
Recreational property owners	708	21.8	31	11.6	19	8	4
Other classified owners2/	1,187	36.5	82	30.6	54	19	9
Unclassified3/	-	-	22	8.2	4	2	16
All types	3,252	100.0	268	100.0	125	54	89

1/ Less than 500 acres.

2/ All other land owners whose classification is known but does not logically fit the classes listed. Sixty-one percent of these owners use their land primarily for residential purposes; about 25 percent have idle holdings held principally for resale; and the remaining owners use their lands for various miscellaneous purposes or combination of purposes such as farming, residence, commercial enterprises, and recreation.

3/ Small urban, suburban, and industrial ownerships that are too small to map and classify properly, and ownerships that for other reasons cannot be classified and placed in appropriate categories.

Table 4.- Number of ownerships and area of privately owned land by size of ownership, 1948

Size of ownership	Ownerships		Total land area		Commercial forest land	Non-commercial forest land	Non-forest land
Acres	No.	Pct.	Thousand acres	Pct.	----- Thousand acres -----		
1- 179	3,081	94.7	101	41.0	40	19	42
180- 379	94	2.9	24	9.8	11	6	7
380- 699	41	1.3	30	12.2	15	8	7
700- 1,299	16	0.5	17	6.9	8	4	5
1,300- 2,599	10	0.3	24	9.8	11	6	7
2,600- 4,999	5	0.2	20	8.1	16	2	2
5,000- 9,999	4	0.1	21	8.5	12	6	3
10,000-19,999	1	-	9	3.7	8	1	(1/)
20,000 and over	-	-	-	-	-	-	-
All classified ownerships	3,252	100.0	246	100.0	121	52	73
Unclassified	-	-	22	-	4	2	16
Total acreage	-	-	268	-	125	54	89

1/ Less than 500 acres.

Table 5.- Commercial forest land by type of ownership and by timber type, 1948

Type of ownership	Total	Timber type	
		Redwood	Douglas-fir
	Thousand acres	Pct.	--- Thousand acres ---
Timber operating company	-	-	-	-
Timber holding company	7	5.6	7	-
Timber operating individual	2	1.6	2	-
Timber holding individual	13	10.4	11	2
Range livestock farming company	(1/)	-	(1/)	-
Range livestock farming individual	2	1.6	2	-
Other farmers	24	19.2	24	-
Recreational property owners	19	15.2	19	(1/)
Other classified owners	54	43.2	54	-
Unclassified	4	3.2	4	-
All types	125	100.0	123	2

1/ Less than 500 acres.

Table 6.- Privately owned commercial forest land by size of ownership and by timber type, 1948

Size of ownership	Total		Timber type	
			Redwood	Douglas-fir
Acres	Thousand acres	Pct.	--- Thousand acres ---	
1- 179	40	33.1	40	(1/)
180- 379	11	9.1	11	-
380- 699	15	12.4	15	-
700- 1,299	8	6.6	6	2
1,300- 2,599	11	9.1	11	-
2,600- 4,999	16	13.2	16	-
5,000- 9,999	12	9.9	12	-
10,000-19,999	8	6.6	8	-
20,000 and over	-	-	-	-
All classified ownerships	121	100.0	119	2
Unclassified	4	-	4	-
Total acreage	125	-	123	2

1/ Less than 500 acres.

Table 7.- Commercial forest land by type of ownership and by age class of timber, 1948

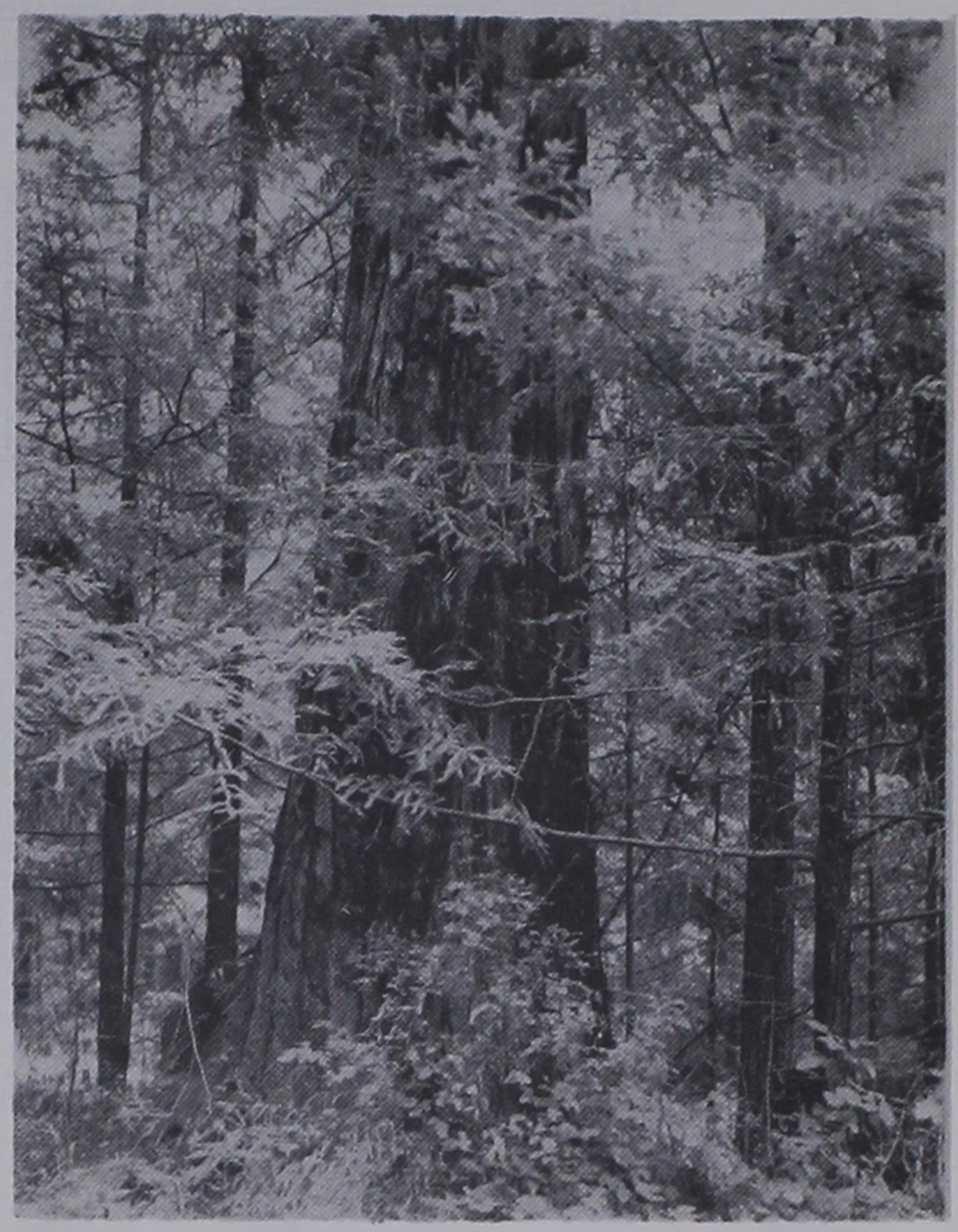
Type of ownership	Total	Age class					
		Old growth	Old growth-young growth	Young growth-old growth	Large young growth	Small young growth	Non-stocked 1/
	Thousand acres	Pct.	---------- Thousand acres ----------				
Timber operating company	-	-	-	-	-	-	-	-
Timber holding company	7	5.6	-	-	-	5	(2/)	2
Timber operating individual	2	1.6	-	(2/)	-	2	-	-
Timber holding individual	13	10.4	-	-	-	11	1	1
Range livestock farming company	(2/)	-	-	-	-	(2/)	-	-
Range livestock farming individual	2	1.6	-	-	-	1	1	(2/)
Other farmers	24	19.2	-	-	1	17	1	5
Recreational property owners	19	15.2	-	(2/)	(2/)	15	1	3
Other classified owners	54	43.2	-	1	3	35	6	9
Unclassified	4	3.2	-	-	-	3	(2/)	1
All types	125	100.0	-	1	4	89	10	21

1/ Commercial forest land nonstocked with commercial conifers but covered primarily with hardwoods and chaparral.

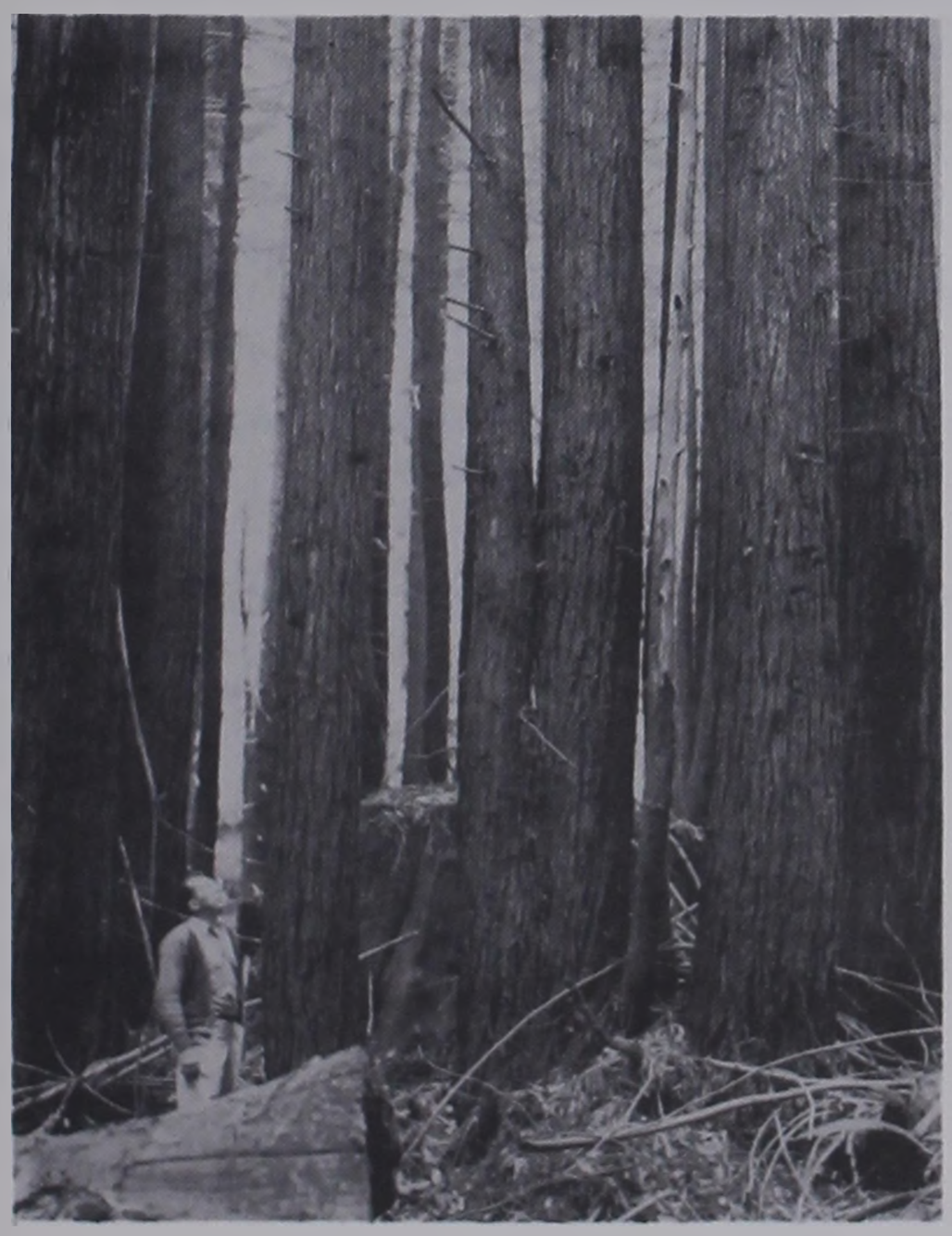
2/ Less than 500 acres.

AGE CLASSES OF TIMBER STANDS ON COMMERCIAL FOREST LAND

Old growth



Young growth - old growth



Large young growth

Small young growth

Table 8.- Privately owned commercial forest land by size of ownership and by age class of timber, 1948

Size of ownership	Total	Age class					
		Old growth	Old growth-young growth	Young growth-old growth	Large young growth	Small young growth	Non-stocked
Acres	Thousand acres	Pct.	---------- Thousand acres ----------				
1- 179	40	33.1	-	-	1	30	1	8
180- 379	11	9.1	-	(1/)	1	8	(1/)	2
380- 699	15	12.4	-	(1/)	(1/)	10	2	3
700- 1,299	8	6.6	-	-	-	6	1	1
1,300- 2,599	11	9.1	-	1	(1/)	8	1	1
2,600- 4,999	16	13.2	-	(1/)	1	12	1	2
5,000- 9,999	12	9.9	-	-	(1/)	7	2	3
10,000-19,999	8	6.6	-	(1/)	1	5	2	(1/)
20,000 and over	-	-	-	-	-	-	-	-
All classified ownerships	121	100.0	-	1	4	86	10	20
Unclassified	4	-	-	-	-	3	(1/)	1
Total acreage	125	-	-	1	4	89	10	21

1/ Less than 500 acres.

Table 9.- Commercial forest land by age class of timber and by density of stand, 1948

Age class	Total	Density of stand			
		Dense and semidense	Open	Very open	Non-stocked
	Thousand acres				
Old growth	-	-	-	-	-
Old growth--young growth	1	1	-	(1/)	-
Young growth--old growth	4	2	2	-	-
Large young growth	89	11	50	28	-
Small young growth	10	(1/)	2	8	-
Nonstocked	21	-	-	-	21
Total	125	14	54	36	21

1/ Less than 500 acres.

Table 10.- Commercial forest land by timber type and by site quality, 1948

Timber type	Total	Site quality		
		High	Medium	Low
	Thousand acres			
Redwood	123	18	105	-
Douglas-fir	2	-	2	-
All types	125	18	107	-

Table 11.- Commercial forest land area by timber type, stand-size class, degree of stocking, and ownership, 1948

Timber type and stand-size class 1/	All areas			Degree of stocking 2/ and ownership											
				Well-stocked			Medium-stocked			Poorly stocked			Nonstocked		
	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private
	Thousand acres														
Redwood															
Old-growth saw timber	1	-	1	1	-	1	-	-	-	(3/)	-	(3/)	-	-	-
Young-growth saw timber	92	(3/)	92	13	(3/)	13	51	(3/)	51	28	-	28	-	-	-
Pole timber	9	-	9	(3/)	-	(3/)	2	-	2	7	-	7	-	-	-
Nonstocked	21	(3/)	21	-	-	-	-	-	-	-	-	-	21	(3/)	21
Total	123	(3/)	123	14	(3/)	14	53	(3/)	53	35	-	35	21	(3/)	21
Douglas-fir															
Old-growth saw timber	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Young-growth saw timber	1	-	1	(3/)	-	(3/)	1	-	1	-	-	-	-	-	-
Pole timber	1	-	1	-	-	-	-	-	-	1	-	1	-	-	-
Nonstocked	(3/)	-	(3/)	-	-	-	-	-	-	-	-	-	(3/)	-	(3/)
Total	2	-	2	(3/)	-	(3/)	1	-	1	1	-	1	(3/)	-	(3/)
All types															
Old-growth saw timber	1	-	1	1	-	1	-	-	-	(3/)	-	(3/)	-	-	-
Young-growth saw timber	93	(3/)	93	13	(3/)	13	52	(3/)	52	28	-	28	-	-	-
Pole timber	10	-	10	(3/)	-	(3/)	2	-	2	8	-	8	-	-	-
Nonstocked	21	(3/)	21	-	-	-	-	-	-	-	-	-	21	(3/)	21
Total	125	(3/)	125	14	(3/)	14	54	(3/)	54	36	-	36	21	(3/)	21

1/ See relationship of stand-size classes to age classes, page 16.

2/ To obtain degree of stocking, Survey density classes (see page 20) were converted as follows: dense and semidense -- well stocked; open -- medium stocked; and very open -- poorly stocked.

3/ Less than 500 acres.

PROCEDURES

Area Delineation

To determine the extent, location, and condition of all forest lands in Santa Cruz County, aerial photographs were delineated on the basis of (1) present cover of vegetation, (2) suitability for growing timber crops, and (3) age and density of timber stands. The minimum unit classified and mapped was ten acres.

The segregation of timber growing lands from other lands was difficult where commercial conifers were missing from the area. It has been assumed on the basis of their physical characteristics that such areas once supported timber stands and will do so again if reforested. While this assumption may be true in most cases, as verified by observation and historical evidence, recent soil surveys in other forest land areas in the Redwood region have demonstrated that some nonstocked areas classified as commercial forest land in this report may need to be reclassified as a consequence of the soil survey findings.

Transfer to base maps

After photo delineation was completed, Timber Stand Maps were prepared by transferring photo classifications to 7-1/2-minute quadrangle size base maps at a common scale of 2 inches to the mile. Kind and density of vegetation, age-structure and density of coniferous timber stands, and other information pertinent to the forest resource are shown. As a final preparation for area measurement other related information such as political and economic subdivisions, ownership, and commercial timber type boundaries were marked along east-west transect lines spaced 2 miles apart. Inasmuch as there were changes in the timber classifications caused by cutting and fire since the date of aerial photography, adjustments of age-density classes were made along these transect lines following field examination so that the class acreages when compiled would show conditions as of the inventory year.

Ownership determination

Information on land ownership in Santa Cruz County was obtained from the county tax assessment rolls, and other official records of the County Assessor and Tax Collector, using a line sampling technique.[1/] Parallel lines spaced 2 miles apart were drawn on the quadrangle base maps. Ownership boundaries, taken from the county plat maps, were marked along these lines. The proportion of total line traversing an ownership class was taken as the proportion of the total acreage in

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1/ Details of the line sampling method used for estimating area and procedure for estimating number of owners are given in "A New Approach to Forest Ownership Surveys," by A. A. Hasel and Adon Poli, Land Economics, Vol. XXV, No. 1, Feb. 1949, pp. 1-10.

that particular class. This acreage was classified further by measuring the intercepts of the various vegetation and timber stand classifications used in the Forest Survey.

Owners of properties traversed by the sample lines constituted the ownership sample. The county property records provided the address of the owner, and the acreage of each parcel of land in the sample. The acreage figures were used to classify private ownerships and land area by size. Each sample owner was mailed a questionnaire card by the State Division of Forestry. Answers on these cards provided information used to classify the sample ownerships as to type of ownership. Similar information about the land of the non-respondents was obtained by a field followup, in which key informants were questioned in local public offices and in the communities where the owners have their land.

Area measurement and compilation

To estimate the areas, parallel lines spaced 2 miles apart were drawn east and west on the quadrangle base maps. Acreage figures were then obtained by recording line intercept measurements of all pertinent class subdivisions along each of the sample lines transecting the quadrangle. These subdivisions included age, density, and type of timber stands and type and size of ownership. The ratio of total line length to total area for the quadrangle provided the factor to convert line segments in inches to area in acres. These acreages were then totaled by county, and adjusted if necessary to check with the Bureau of Census acreages by counties for 1940. Estimated acreage figures appearing in the tables were compiled and summarized by means of punch cards and card tabulating equipment.

Stand-size class determination

The national pattern established for Forest Survey requires the classification of commercial forest land into stand-size classes. In order to present the California forest resource data in terms of stand-size classes, mapped age classes have been grouped as follows:

Age class	Stand-size class
Old growth Old growth-young growth	Old growth saw timber
Young growth-old growth Large young growth	Young growth saw timber
Small young growth	Pole timber
Nonstocked	Nonstocked

The forest stands classified as saw timber by this grouping conform closely to the National Forest Survey definitions. Areas of

seedlings and saplings are not shown separately because these areas occurred in such small and widely scattered units that separate photo classification was not practicable. These areas were included with other stand-size classes, chiefly pole timber and nonstocked.

Site quality determination

Three broad site classes: high, medium, and low, have been used to express the relative capacity of commercial forest land to produce timber crops. Twenty separate field site determinations, well distributed over the two major timber types, were grouped into these three classes. For each type the number of site determinations in each site class was expressed as a percentage of all observations within the type. These percentages were then applied to the total area by type to provide estimates of relative site quality.

The relationship between the broad site quality classes--high, medium, and low--and site class and site index ratings of commercial forest land is shown in the following table and explained in the appended footnotes.

Broad rating	Redwood and Douglas-fir types		All other types	
	Site class[1/]	Site index[2/]	Site class[3/]	Site index[4/]
High	I	200	IA	200
	II	170		
	III	140	I	175
Medium			II	150
	IV	110	III	125
Low			IV	100
	V	80	V	75

1/ According to R. E. McArdle and W. H. Meyer in U. S. Department of Agriculture Technical Bulletin 201, October, 1930, "The Yield of Douglas-fir in the Pacific Northwest."

2/ The total height that the average dominant Douglas-fir trees reach at 100 years of age.

3/ According to D. Dunning in Research Note No. 28, December 1, 1942, "A Site Classification for the Mixed-Conifer Selection Forests of the Sierra Nevada," California Forest and Range Experiment Station.

4/ The total height that the average dominant trees reach at 300 years of age.

ACCURACY OF ESTIMATE

Estimates of acreages in the various land classes as determined by Forest Survey procedures are subject to two general types of errors: (1) non-sampling errors in photo classification, mapping, tabulation, computation, and compilation, and (2) sampling errors which arise from taking a sample rather than making a complete inventory. Errors of the first type are kept to a minimum by frequent checking and close supervision of all field and office work. If these non-sampling errors are negligible or compensating, then the sampling errors provide measures of the reliability of the acreage estimates and can be computed by statistical methods. Magnitudes of the sampling errors depend on the intensity of the sampling and the variability of the data.

For the principal forest land classes of Santa Cruz County, the sampling errors 2/ are as follows:

Class	Sampling error	
	Acres	Percent
Forest land	9,025	4.75
Commercial forest land	7,362	5.89
Noncommercial forest land	4,838	8.96

Statistics of forest area by age class, type, and ownership classes presented in this report are subject to increasing sampling errors as the class acreages decrease. A partial range of area sampling errors applicable to areas in this report is shown below:

Acres in class	Sampling error in percent
10,000	21.0
20,000	14.5
40,000	10.5
100,000	6.5
200,000	4.5
500,000	3.0
1,000,000	2.0
2,000,000	1.5

2/ For one standard error; that is, the chances are two out of three that the class acreages as determined by 100-percent measurement lie within the limits of the calculated acreages plus and minus the amounts shown.

DEFINITION OF TERMS

Area

Forest land area. Includes (a) lands which are at least 10 percent stocked by trees of any size and capable of producing timber or other wood products, or of exerting an influence on the climate or on the water regime; (b) land from which the trees described in (a) have been removed to less than 10 percent stocking and which have not been developed for other use; (c) afforested areas; and (d) chaparral areas.

Commercial forest land area. Forest land which (a) is producing or physically capable of producing usable crops of wood (usually saw timber), (b) economically available now or prospectively, and (c) not withdrawn from timber utilization.

Noncommercial forest land area. Forest land (a) withdrawn from timber utilization through statute, ordinance, or administrative order but which otherwise qualifies as commercial forest land and (b) incapable of yielding usable wood products (usually saw timber) because of adverse site conditions, or so physically inaccessible as to be unavailable economically in the foreseeable future. Includes chaparral land.

Chaparral land area. Lands supporting heavily branched dwarf trees or shrubs, usually evergreen, the crown canopy of which normally covers more than 50 percent of the ground and whose primary value is watershed protection. The more common chaparral constituents are species of Quercus, Cercocarpus, Garrya, Ceanothus, Arctostaphylos, and Adenostoma. Types dominated by such shrubs as Artemisia, Opuntia, Purshia, Gutierrezia, or semidesert species are not commonly considered chaparral.

Nonforest land area. Land that does not qualify as forest land. Includes land which has never supported forest growth; land from which the forest has been removed to less than 10 percent stocking and has been developed for other use, such as grazing, agricultural, residential, or industrial; all land in thickly populated urban and suburban areas, and water classified by the Bureau of Census as land.

Timber Stand Classifications

Age classes of commercial conifer stands[3] on commercial forest land.

1. Old growth. Mature trees[4] compose more than 80 percent of the conifer canopy.

2. Old growth-young growth. Mature trees compose from 50 to 80 percent of the conifer canopy.

3/ Stands composed of the following species, singly or in combination: redwood, ponderosa pine, and Douglas-fir.

4/ All trees that can be considered as having passed their optimum growth.

3. Young growth-old growth. Mature trees compose 20 to 50 percent of the conifer canopy.

4. Young growth. Mature trees compose less than 20 percent of the conifer canopy.

   a. Large young growth. More than 5 percent of the immature trees are larger than 11 inches d.b.h.

   b. Small young growth. Ninety-five percent or more of the immature trees are less than 11 inches d.b.h.

Density classes of commercial conifer stands on commercial forest land.

1. Dense and semidense. Commercial conifers cover 50 percent or more of the ground space.

2. Open. Commercial conifers cover from 20 to 50 percent of the ground space.

3. Very open. Commercial conifers cover from 5 to 20 percent of the ground space.

4. Nonstocked. Commercial conifers cover less than 5 percent of the ground space.

Timber type. An extensive area of commercial or withdrawn commercial forest land characterized by a predominant conifer species or group of conifer species. Other vegetation (such as hardwood and chaparral areas) and/or nonvegetation types (such as barren areas) may also occur in subordinate amounts within the same area.

Commercial timber types

a. Redwood. Areas with redwood comprising 20 percent or more of the commercial-conifer cover.

b. Douglas-fir. Areas with Douglas-fir comprising more than 80 percent of the commercial-conifer cover; or mixtures of Douglas-fir and true fir in which Douglas-fir comprises 20 percent or more of the commercial-conifer cover.

Other timber and vegetation types

a. Coniferous woodland. Areas with such trees as knobcone pine, digger pine, western yew, California nutmeg, and scattered and scrub trees of other conifer species, covering more than 5 percent of the ground space and predominant over hardwoods that may partly compose the cover.

b. Hardwoods (woodland). Areas with hardwood trees (oaks, madrone, tanoak, etc.), covering more than 50 percent of the ground except where in mixture with commercial conifers or herbaceous vegetation.

c. Woodland-grass. Areas with hardwood trees and herbaceous vegetation occurring in mixture--without commercial conifers-- and the trees covering from 5 to 80 percent of the ground area and predominant over noncommercial conifers present in the cover.

d. Shrub and herb types consist of the following, where not in mixture with noncommercial conifers or hardwoods.

1. Chaparral. Areas with such shrubs as manzanita, ceanothus, scrub oak, etc., covering more than 50 percent of the ground.

2. Coastal sagebrush. Areas with such shrubs as California sagebrush, coyote brush, and wild buckwheats covering more than 50 percent of the ground.

3. Grass. Areas with grasses and associated herbaceous vegetation covering more than 50 percent of the ground except where the type qualifies as woodland-grass.

4. Marsh. Areas with herbaceous vegetation characteristic of very poorly drained areas.

Nonvegetation types

a. Barren. Bare ground, rocky areas, river beds, mine dredgings, and talus essentially devoid of vegetation.

b. Cultivated, urban, and industrial. Areas that are under cultivation or are used for residential or industrial purposes.

Stand-size classes

1. Saw-timber stands. Defined as stands having a minimum net volume per acre of 4,000 board feet, International 1/4-inch rule, in saw-timber trees (11.0 inches d.b.h. and larger for all species).

a. Old-growth saw-timber stands. Saw-timber stands in which over 50 percent of the net board-foot volume is in old-growth saw-timber trees.

b. Young-growth saw-timber stands. Saw-timber stands in which 50 percent or more of the board-foot volume is in young-growth saw-timber trees.

2. Pole-timber stands. Defined as stands failing to meet the saw-timber stand specifications, but at least 10 percent stocked with pole-timber and larger trees and with at least half the minimum stocking in pole-timber trees (5.0 to 10.9 inches d.b.h.).

3. Seedling and sapling stands. Defined as forest stands not qualifying as either saw-timber or pole-timber stands but having at least 10 percent stocking of trees and with at least half the minimum stocking in seedlings and saplings (0 to 4.9 inches d.b.h.).

4. Nonstocked areas. Defined as areas of forest land not qualifying as saw-timber, pole-timber, or seedling and sapling stands.

Ownership Classifications

Federal. Land owned by the Federal Government.

Tax deeded. Former privately owned but now deeded to the State for nonpayment of taxes.

Other State, county, and municipal. Lands in State, county, or municipal ownership other than tax-deeded.

Timber operating company. A corporation actively engaged in commercial logging and milling of timber as a major enterprise.

Timber holding company. A corporation holding timber land principally for future commercial timber operations. The timber may be held for the company's own future use or to sell to other operators.

Timber operating individual. A person whose major enterprise is commercial timber operations. This includes individuals logging timber, operating a large or small sawmill, or splitting timber commercially for sale.

Timber holding individual. A person holding timber land principally for future commercial timber operations. The timber may be held for his own future operations or to sell to other operators.

Range livestock farming company. A corporation engaged primarily in range livestock farming operations.

Range livestock farming individual. A person whose major enterprise is range livestock farming.

Other farmers. Persons or corporations that have farming as their major activity, but whose principal agricultural enterprise is not range livestock farming.

Other classified owners. All other land owners whose classification is known but does not logically fit the classes listed above. Examples are owners of land held for residential purposes only, mining claims, and reservoir sites.

Unclassified. Land ownerships in urban, suburban, and industrial settlements that are too small to map and classify properly, and ownerships that for other reasons cannot be classified and placed in appropriate categories.